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ABSTRACT

A study was conducted to observe the varying degree of consistency between three sources of data with respect to the same classroom phenomenon. Data was gathered in a public high school near Detroit in 1969. Using the basic 10-category Flanders interaction analysis system, systematic observations of controversial issues discussions were made in the social studies classrooms of 14 teachers during 28 different discussion sessions (averaging 70 minutes per teacher). Student talk/teacher talk ratios (as indices of the extent to which students rather than teachers talk during the discussions) and student-initiated/teacher-initiated talk ratios (as indices of the tendency of students to offer their own ideas without being induced to do so by the teacher) were derived from the data. The teachers were questioned by means of a paper and pencil questionnaire about students' freedom to express their opinions during these discussions, and a sample of their students responded to a similar questionnaire. An analysis of the consistency of these sources of data was then made, using product moment correlations as indicators of between-source agreement. Apparent distortions in the teacher-reported data seem to be related to the importance which teachers assign to student opinion expression as a teaching goal. The teacher data were found to disagree with the other two sources, and were judged to be an unsatisfactory source of data for this classroom phenomenon. (Author/JES)

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A COMPARISON OF THREE SOURCES OF CLASSROOM DATA: TEACHERS, STUDENTS, AND SYSTEMATIC OBSERVATION

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ABSTRACT

This paper reports the varying degree of consistency between three sources of data with respect to the same classroom phenomenon. It is based on data gathered as part of a field study in a public high school near Detroit, Michigan, in the winter semester of 1969. Using the basic ten-category Flanders' interaction analysis system, systematic observations of controversial issues discussions were made in social studies classrooms. The teachers were questioned by means of a paper and pencil questionnaire about students' freedom to express their opinions during these discussions, and a sample of their students responded to a similar questionnaire. An analysis of the consistency of these sources of data was then made, using product-moment correlations as indicators of between-source agreement. Apparent distortions in the teacher-reported data seem to be related to the importance which teachers assign to student opinion expression. The teacher data were found to disagree with the other two sources, and were judged to be an unsatisfactory source of data for this classroom phenomenon.

Introduction

A field researcher who is interested in assessing classroom behavior and its relationship to other variables is always faced with the problem of deciding from what source to collect his data. At least three alternatives are usually available: 1) the report of one or more outside observers; 2) the teacher's report; and 3) the students' reports. For most purposes the first mentioned source is most desirable because of greater objectivity. The researcher is often forced because of economic or accessability problems to choose between the latter two sources, however, and then the question arises: Which of these is the more "objective?"

Objectivity here can imply two common properties of a measure -- those of validity and reliability. When outside observers are used in classrooms the reliability of their data can be checked in a number of ways.

But teachers' reports of behavior in their own classrooms cannot be subjected to tests of reliability and must be treated with caution. Because in the case of student reports there can be more than one observation, that source might be viewed with somewhat less concern on this point, although some might argue that students as individuals are less able observers than teachers. How much confidence can be placed on teacher- and/or student-reported measures of classroom behavior? This is the question we seek to answer tentatively.

Method and Sources of Data

The three sources of data have as their object one social studies classroom phenomenon existing during teacher-identified discussions of controversial social issues. This is the extent to which students feel free to express their opinions. That phenomenon can be referred to as one component of the "openness"of the discussion, which is in turn a part of the "classroom climate" generated in part by the teacher, students, and subject matter. One observer coded class discussions live, using Flanders' basic ten-category interaction analysis system. Each of fourteen teachers in the social studies department of the high school under study was observed; twenty-eight different discussion sessions were used. A total of 19,159 tallies were recorded, amounting to about 958 total minutes, or an average of about 34 minutes per session, and an average of nearly 70 minutes per teacher. Reliability of these data was checked in two ways. First, two taped sessions were coded by another trained observer, and Scott's inter-coder reliability coefficients for the comparison are

0.92 and 0.85. Second, six weeks following the original live observations of the two discussions, the observer's recoding of the tapes was compared with the original coding, and the reliability coefficients are 0.74 and 0.71 for these comparisons.

Two variables were built from the interaction analysis coding, after summing all data for each teacher: (1) the student talk/teacher talk ratio (8 + 9/1 + 2 + 3 + 4 + 5 + 6 + 7) is derived from the total number of 8 and 9 category tallies divided by the total tallies in categories 1 through 7. Values of this ratio ranged from 4.29 to .06, with a median of .42. This yields a variable which indicates the extent to which students rather than teachers talk during the discussions. (2) The student-initiated/ teacher-initiated student talk ratio (9/8) is derived from the total number of category 9 tallies divided by the total number of 8's. This value ranged from 34.65 to 0.46, with a median of 2.43. This provides a variable which indicates the tendency of students to offer their own ideas without being induced to do so by the teacher. Compared with the student talk-teacher talk ratio, this is considered to be a more direct indication of how much students actually expressed their own opinions in the discussions. It is interesting to note, however, that the two measures have a correlation of +0.89, indicating a strong positive relationship.

Questionnaire data from the teachers provided another source of data. Teachers were asked the following question: "In general, during discussions of current social problems, how free do you think the class members as a whole feel to express their opinions?"; they responded by making a choice between: "Feel very hesitant;""Feel somewhat hesitant;" and "Feel free."

Their responses were coded 1, 2, or 3 for those categories.

Similarly, a sample of students who previously had or who presently had one or more of these teachers was asked the same question. The responses, coded as described for the teachers, were averaged to provide a mean student-reported score for each teacher. Numbers of students reporting on a given teacher ranged from 38 to 5, with a median of 19. The values for this variable ranged from 3.00 to 2.30, with a median of 2.60.

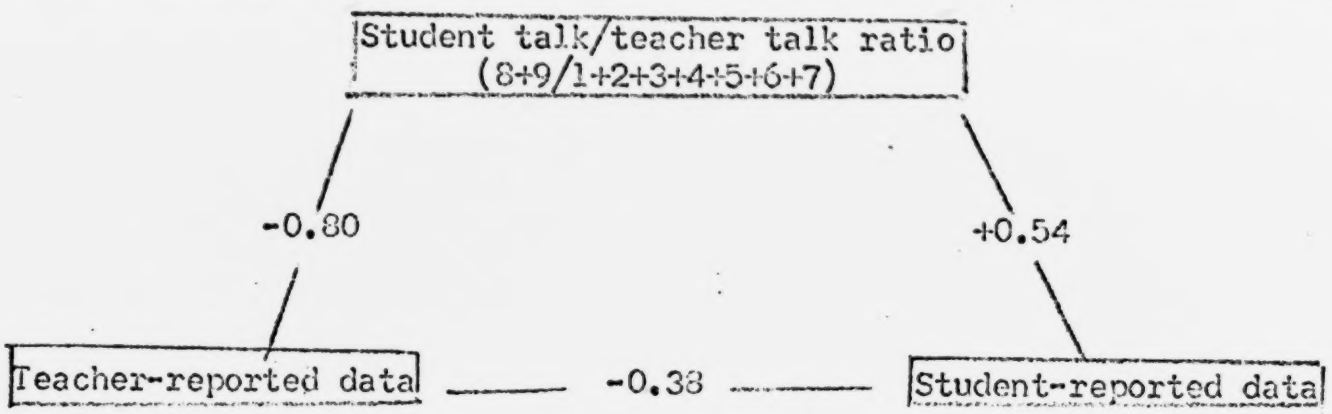
Two objections to the above operations must be recognized. First, pooling student responses to the above question into arithmetic means to generate a teacher's score is not a strictly legitimate operation, since the level of original measurement is ordinal rather than interval or ratio. Because tests of significance will not be applied to the agreement measures (product-moment correlations) used below this is not considered a serious weakness. Second, the teacher-reported variable is also at the ordinal level of measurement, but this limitation is also not considered prohibitive since significance tests are not applied.

One final limitation -- concerning the extent of generalizability of findings -- must be made explicit before turning to the data. This study is based on a limited number of teachers from a single school, and represents only one subject area -- secondary school social studies instruction. Generalizations from the findings cannot be broad, therefore, although they can suggest cautions which should be heeded by researchers interested in studying classroom phenomena in general.

Findings

In order to evaluate the between-source consistency of observations, product-moment correlations between teachers' and students' responses to the "freedom to express opinions" question and the student talk/teacher talk ratio are presented in Figure 1. The interaction analysis data ratio gives some indication of the relative amount of time students were allowed

Figure 1. -- Agreement between observer's I/A student talk/teacher talk ratio, teacher-reported data, and student reported data on freedom of students to express opinions in class*



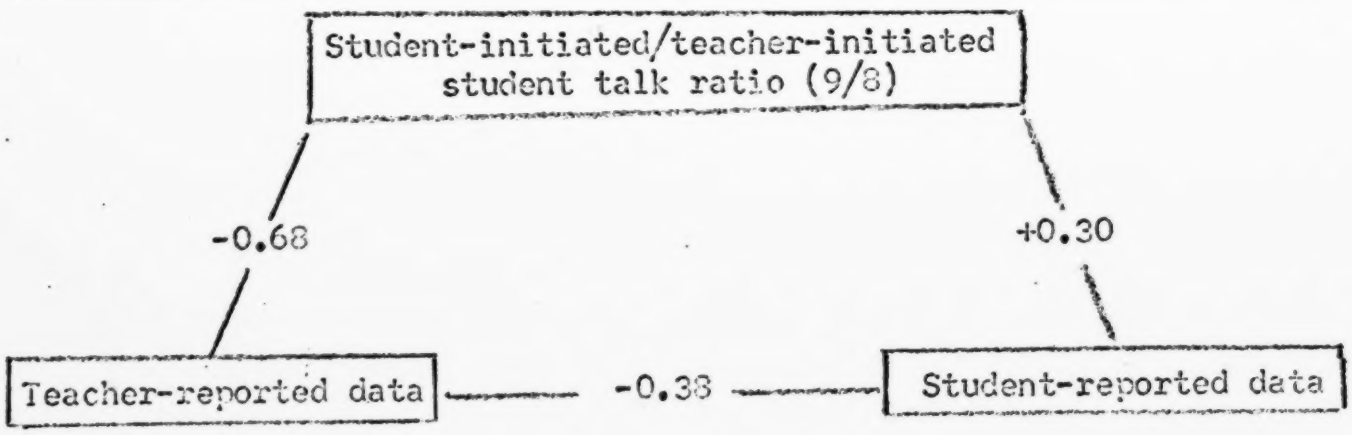
* Coefficients in this and subsequent figures are product-moment correlations.

to talk in the controversial issues discussions, and suggests an indicator of the amount of student opinion expression. There is agreement between the student talk/teacher talk ratio and the students' reports of freedom of opinion expression ($r = +0.54$), but there is disagreement between the teachers' reports and the other two sources of data. In the case of the teacher data-interaction analysis data comparison, the correlation is quite strongly negative ($r = -0.80$), and for the teacher-student comparison it is

weakly negative (r = -0.38). It is difficult to avoid inferring that the teachers perceive this particular element of classroom phenomena differently than both their students and an outside observer.

Another variable derived from the interaction analysis data is compared with the teacher and student data in Figure 2. This variable is the student-initiated teacher-initiated student talk ratio. It is used

Figure 2. -- Agreement between observer's I/A student-initiated/teacher initiated student talk ratio, teacher-reported data, and student-reported data on freedom of students to express opinions in class



as a more direct measure of student opinion expression; student initiated rather than teacher-initiated student verbalizations are assumed to be more indicative of spontaneous, or "free" expression. The pattern of the correlations is the same as it was with the previous comparisons, with a strong negative correlation between teacher data and the interaction analysis data (r = -0.68), the same weak negative one between teacher and student data (r = -0.38), and a positive coefficient between student data and the interaction analysis ratio (r = +0.30). This finding strengthens the inference that teachers perceive the freedom of student opinion expression dimension

differently than do students and outside observers.

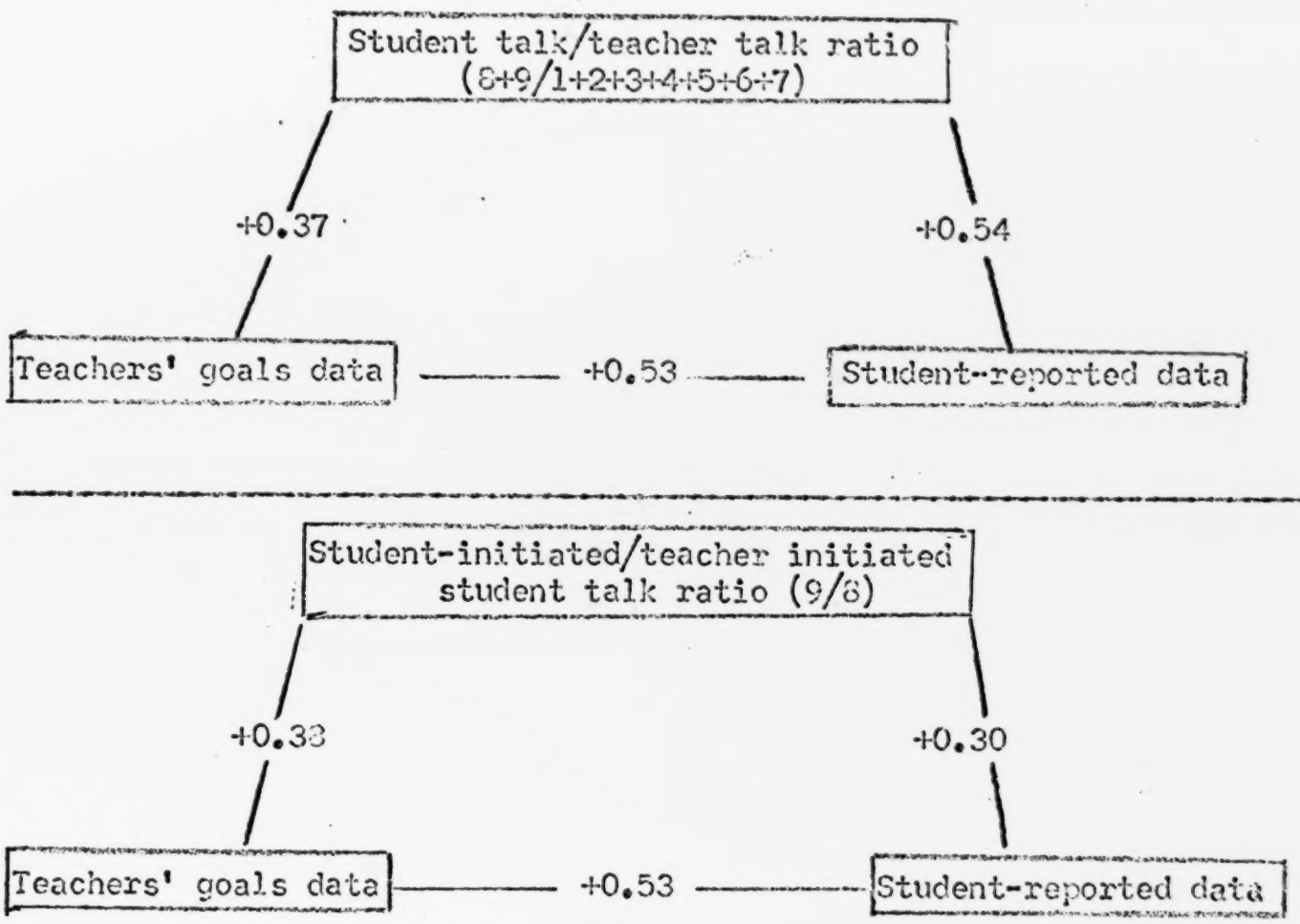
Explaining this finding is a rather difficult task because these data are taken from a study whose objectives did not include the findings, let alone its explanation. One way of looking at the finding is in terms of teachers' assignment of importance to the classroom goal of student opinion expression. If the teacher assigns considerable importance to this part of classroom discourse, he may be more critical of his success in promoting such expression, and compared with his peer who assigns less importance, he may tend to underestimate student expression. If this is true, it could help to explain the rather curious finding reported above.

Fortunately, the teacher questionnaire contained another item which is germane to this question. It asked teachers to respond to the following: "Students should be encouraged to voice their opinions on all subjects," by choosing one of the following: "Strongly Agree;" "Agree;" "Disagree;" or "Strongly Disagree;" (these responses were assigned values of 4, 3, 2, and 1, respectively.) Because this variable indicated the relative assignment of importance to student opinion expression, we can proceed to examine the suggested explanation given for the finding. The correlation between the teachers' perceptions of how free students feel to voice opinions in their classes and the assignment of emphasis on this as a goal is -0.29. This tends to confirm the notion that importance assigned is inversely related to the estimation of success. It remains to be shown that a measure of the teachers' goals agrees more closely with the students' and observer's data than the teacher assessment of his actual

success in the matter.

Figure 3 shows that this is the case; the correlations are all positive, showing agreement between all three sources of data. We

Figure 3. -- Agreement between observer's I/A ratios, teacher-reported goals for and student-reported data on freedom of students to express opinions in class



might conclude, then, that the teacher-reported data concerning the actual freedom of student expression in classrooms is distorted by the assignment of importance to that condition as a teaching goal. The teacher data,

therefore, should not be considered valid.

Conclusion

If a researcher is to select the teacher-reported data for use in representing the "freedom of students to express opinions" variable, it is evident from these findings that when relating it to other variables, he probably will be led to wrong conclusions. In the case of the present data, either student-reported data or data from an outside observer is preferable to the teacher data. Researchers contemplating this selection problem, therefore, are advised to check the consistency of any teacher-generated data about classrooms with external sources.